

CHAPTER 1 INTRODUCTION

This chapter gives the uses of the MK 19, 40-mm Grenade Machine Gun, MOD 3 (Figure 1-1); it describes the MK 19; and it includes lists of equipment data and operational characteristics.

NOTE: The MK 19, 40-mm Grenade Machine Gun, MOD 3, is referred to in this FM as the MK (Mark) 19.

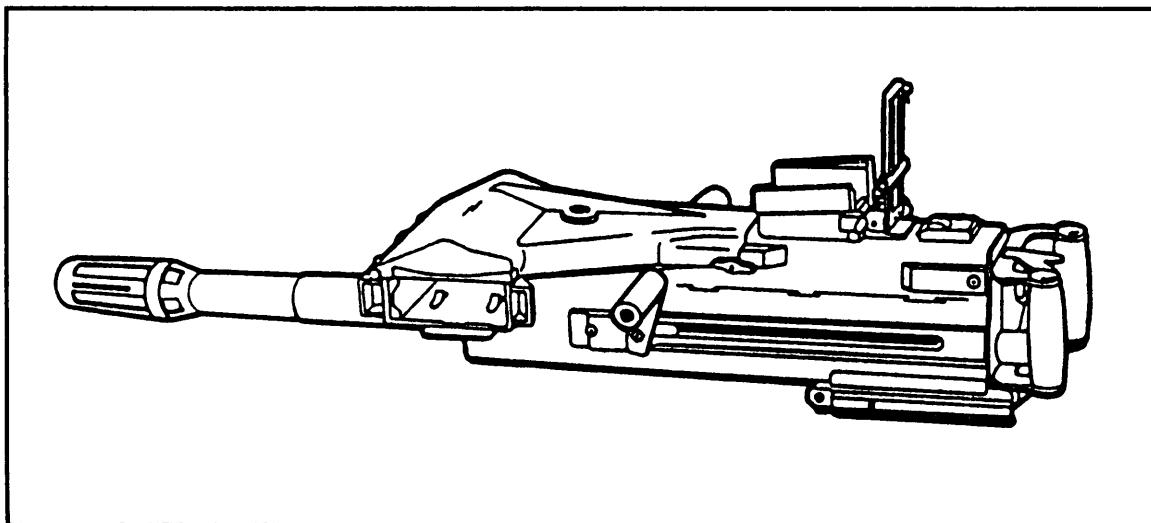


Figure 1-1. 40-mm grenade machine gun, MOD 3, MK 19.

1-1. APPLICATIONS OF THE MK 19

The MK 19 supports the soldier in both the offense and defense. It gives the unit a heavy volume of close, accurate, and continuous fire.

- a. Protect motor movements, assembly areas, and supply trains in bivouac.
- b. Defend against hovering rotary aircraft.
- c. Destroy lightly armored vehicles.
- d. Fire on suspected enemy positions.
- e. Provide high volumes of fire into an engagement area.
- f. Cover obstacles.
- g. Provide indirect fires from defilade positions.

1-2. TRAINING STRATEGY

Training strategy refers to the overall concept of integrating resources with the instruction and training of individual and collective skills needed to carry out a unit's wartime mission. Training strategies for the MK 19 are implemented in TRADOC institutions such as NCOES, Basic and Advanced Officers Courses, and in units. This overall training strategy is multi-faceted and includes the specific strategies used in institution and unit programs, as well as the supporting strategies for use of resources such as publications, ranges, ammunitions, training aids, devices, simulators, and simulations. These strategies are focused on the development of both critical soldier skills and training tasks, as well as leader skills that are required to support the overall intended outcome.

a. Training strategies are made up of two primary components: initial training and sustainment training. Both of these may include individual and collective skills. Initial training is critical. A task that is taught correctly, and that is learned well initially, will be retained longer; performance can be more quickly regained or sustained. This means that initial training must be right. Standard, common and current procedures are used. Over time, individual and unit skills decay. The amount of decay depends on many factors that include the difficulty and complexity of the tasks. Personnel turnover is a primary factor in decay of collective skills, because the loss of critical team or crew members normally causes a need for retraining to restore unit proficiency. If too much time passes between initial and sustainment training periods, or if the established training doctrine is altered, skills will be seriously eroded and complete retraining may be required.

b. The training strategy for the MK 19 begins with leader training and continues with unit training. An example of this overall process is found in Appendix D.

c. Because MK 19 Gunner is a skill level 2 position, personnel will be trained primarily within the unit. The institution will provide a soldier trained in the basics of the MK 19, with an emphasis on "Train the Trainer". There is no training planned for IET soldiers in this system.

d. Training continues in units where basic gunnery skills are taught and gunners are qualified. Once individual and

crew skills are learned, these skills must be sustained in the unit. To accomplish this, leaders must follow the annual gunnery training program outlined in Appendix D. In addition to the sustainment of skills, the unit must incorporate the system into collective training exercises such as platoon and squad live-fire STXs.

e. The strategy for sustaining basic MK 19 gunnery skills includes annual or semiannual instructional and qualification range firing. However, the unit must set up a year-round program to be able to accomplish sustainment. Key elements include training of the trainers, refresher training of preliminary skills, and use of devices for remedial training of soldiers who have trouble attaining qualification standards.

f. Additional skills trained in the unit include night firing, MOPP firing, and moving target training. Related soldier skills--camouflage, cover and concealment, fire and maneuver, and preparation or selection of a fighting position--are addressed in this FM and must be integrated into tactical training. Tactical references are shown in the glossary.

g. In the unit, individual and leader MK 19 tasks are integrated into collective training including squad, section, and platoon drills and STXs, and company LFXs and FTXs. The tasks, conditions and standards for the collective tasks in these exercises as well as the way they are planned and conducted are found in the MTP and Drill books for the organization. Force-on-force exercises using MILES are discussed in TC 25-6. Based on the type of organization, these collective exercises are evaluated to standard leader and trainer after-action reviews. Objective evaluations of both individual and unit proficiency provide both readiness indicators and future training requirements.

h. A critical step in Army's overall MK 19 training strategy is to train-the-trainers and leaders first. Leader courses and unit publications are designed to develop the officer and NCO proficiencies necessary to plan and conduct marksmanship training and evaluate the effectiveness of unit marksmanship programs. Training support materials are provided by the proponent schools. They include: field manuals, training aids, devices, simulators and programs which serve as the doctrinal foundations and guidance for training the force.

i. FM 23-27 is organized to lead the trainer in a progressive manner through the material needed to aid him in training units. Information is presented beginning with preliminary subjects. These include mechanical training, knowledge of the gun's capabilities, and the principles and fundamentals of MK 19 gunnery. Live-fire applications are scheduled after the soldier has demonstrated these preliminary skills. Initial firing will be an instructional exercise, which ultimately leads to the soldier's ability to target the MK 19. Once the soldier understands the gun and has demonstrated sufficient skills necessary to target the gun, additional live-fire training and target-detection exercises at various ranges are conducted. Targets and target scenarios of increasing difficulty are mastered to develop proficiency. This progression and the targets are outlined in Appendix C. This initial individual training of several skills will culminate in the soldier's skill assessment, conducted on the qualification fire range. IAW the procedures specified in Appendix C, this evaluation also provides a partial view of overall unit skill and training effectiveness.

1-3. DESCRIPTION OF THE MK 19

The MK 19 is an air-cooled, blowback-operated machine gun, with five major assemblies (Figure 1-2) . It uses ammunition

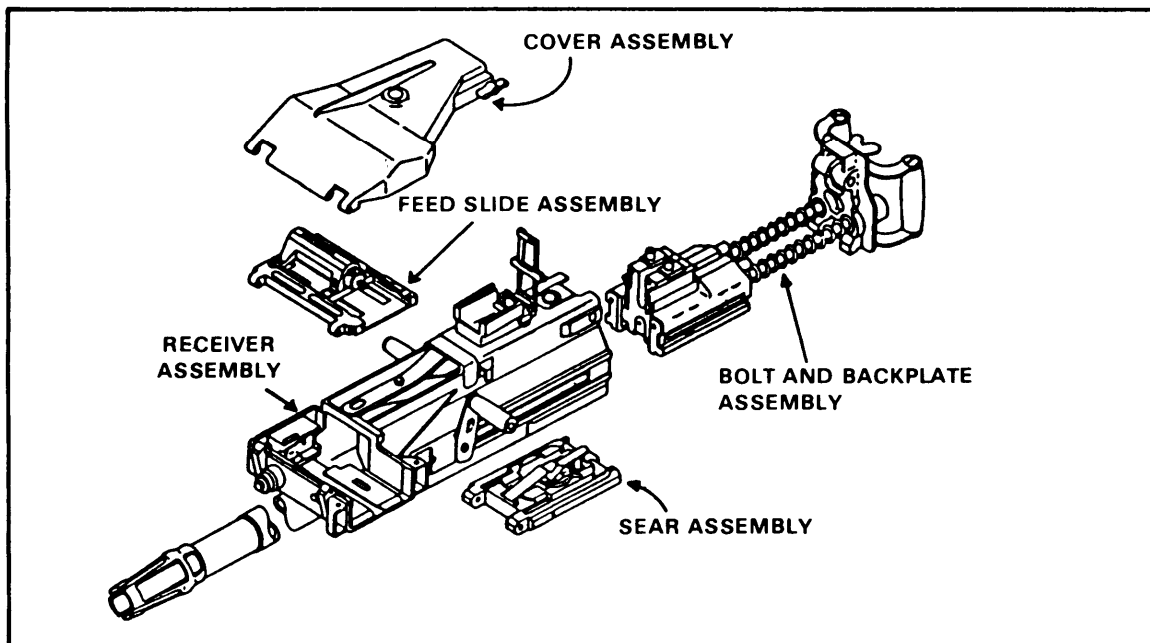


Figure 1-2. Five major assemblies.

that is belt-fed through the left side of the weapon by a disintegrating metallic link belt. Tables 1-1 and 1-2 give MK 19 equipment data and operational characteristics, respectively.

- a. The MK 19 features a barrel which does not overheat, even after prolonged firing.
- b. It has a blade-type front sight attached to the top cover assembly (Figure-1-3).

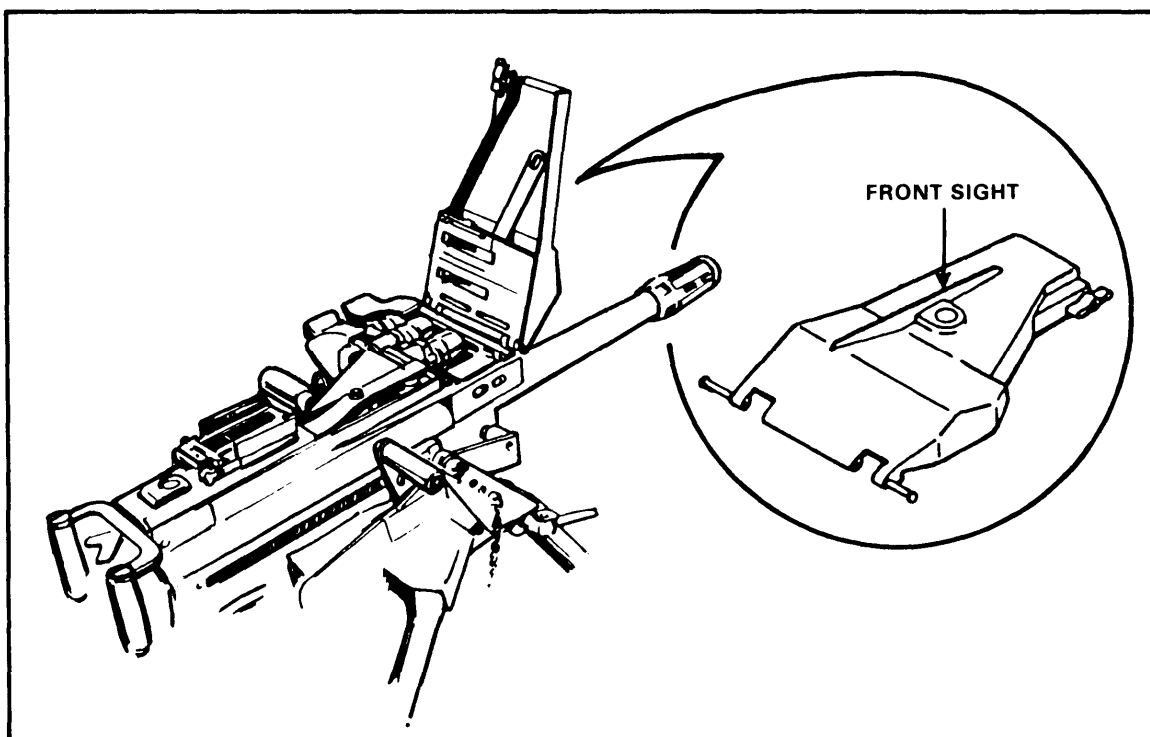


Figure 1-3. Front sight on top cover assembly.

c. The MK 19 has a leaf-type rear sight (with an adjustable range plate) mounted on a spring dovetail base, which should be folded forward to a horizontal position when the weapon is moved, and which has, on the sight leaf, a range plate incremented in 100-meter intervals from 300 to 1500 meters. Range changes may be made using either the slide release or the elevation wheel: the slide release is used for making major changes in elevation; the elevation wheel is used for making fine adjustments (Figure 1-4). The rear sight is adjustable for windage: turning the windage screw clockwise moves the sight to the right; turning it counterclockwise moves the sight to the left. One click equals a 1-mil change.

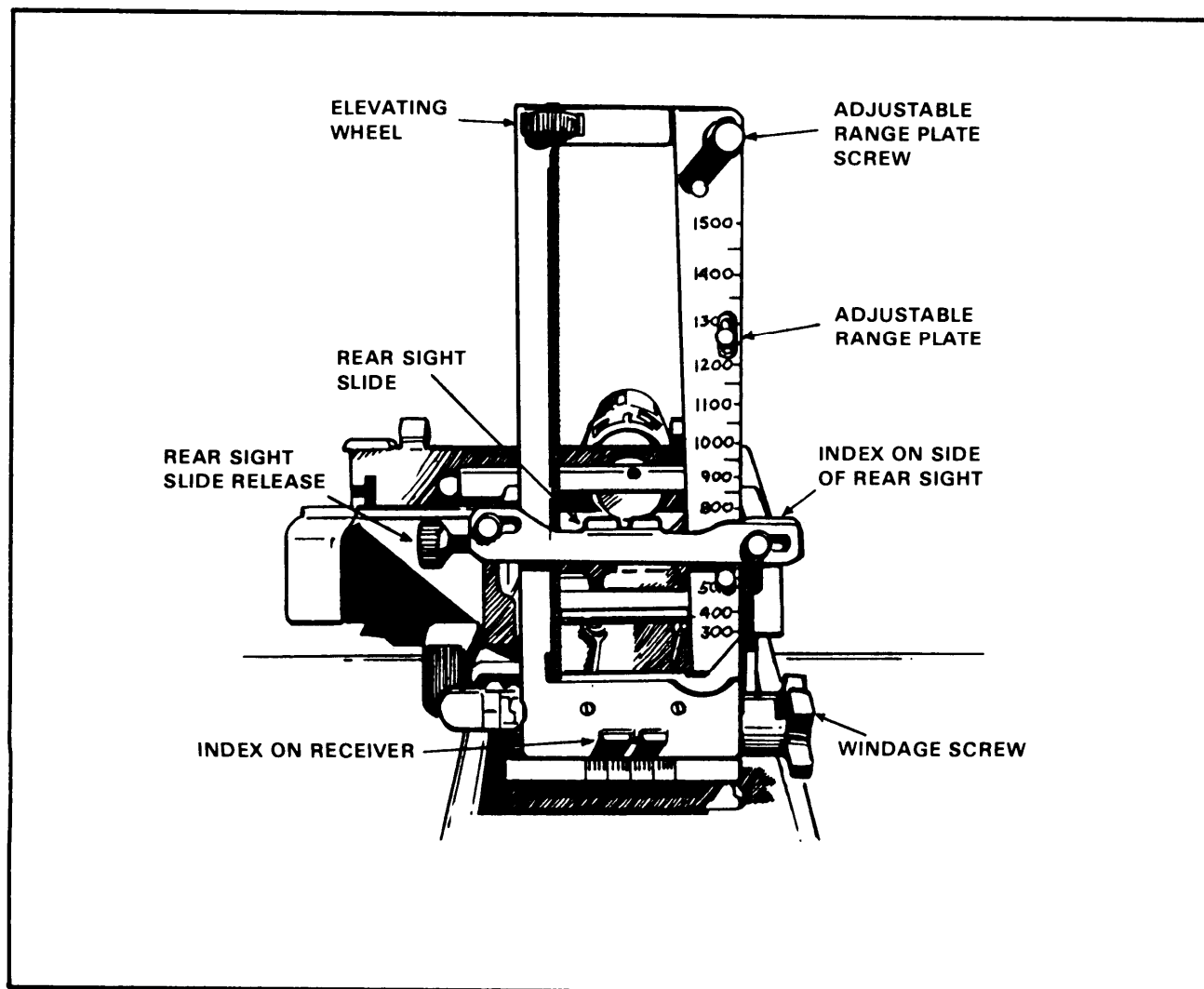


Figure 1-4. Rear sight.

Ammunition	M430 (HEDP), M383 (HE), M918 (TP), M922 (dummy).
MK 19 (MOD 3):	
Weight	75.6 pounds.
Length	43.1 inches.
Width	13.4 inches.
Height	8.8 inches.
MK 64 (MOD 7) gun cradle:	
Weight	21 pounds.
Length	17.5 inches.
Height	9.5 inches.
Tripod (M3) weight	44 pounds.
Total weight, weapon and cradle ...	96.6 pounds.
Total system weight (gun, cradle, and tripod)	140.6 pounds.
Mounts	M3 tripod, M4 pedestal, M66 ring, HMMWV weapon platform, M113 APC commander's cupola.

Table 1-1. Equipment data.

Maximum range	2,212 meters.
Maximum effective range	1,500 meters (point target) 2,212 meters (area target).
Rates of fire:	
Sustained	40 rounds each minute.
Rapid	60 rounds each minute.
Cyclic	325-375 rounds each minute.
Weapon life	50,000 rounds.
Elevation, tripod controlled	100 mils.
Depression, tripod controlled	250 mils.
Traverse, tripod controlled	800 mils (400 left and right).
Planned operating load	400 rounds for HMMWV and all others as prescribed by local commanders.
Weight of 48 rounds in M548 metal container	62 pounds.
Muzzle velocity	790 feet each second.
Angle of fire	Capable of automatic fire at any angle between 0 and 70 degrees elevation, based on the mounting arrangements.
Recoil forces (average)	500 pounds recoil.

Table 1-2. Operational characteristics.

d. The MK 19 uses 40-mm cartridges (Figure 1-5):

WARNING
USE ONLY PRESCRIBED AMMUNITION. DO NOT MIX TYPES OF AMMUNITION. TO DO SO COULD RESULT IN INJURY.

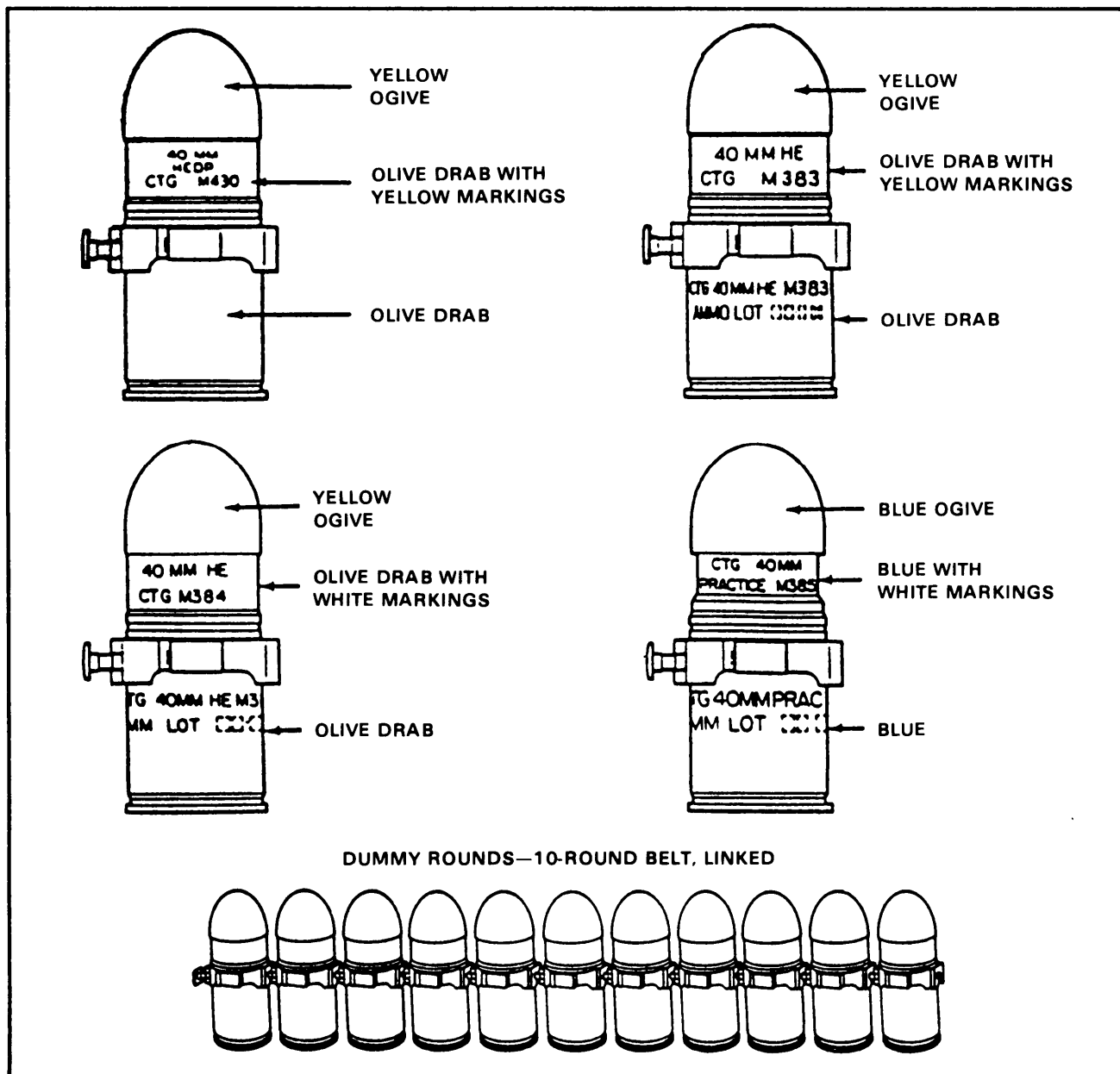


Figure 1-5. 40-mm cartridges.

(1) The HEDP (high-explosive, dual-purpose) M43Ø cartridge, joined with M16A2 links, is the standard round for the MK 19. The impact-type round penetrates 2 inches of steel armor at 0-degree obliquity and inflicts personnel casualties in the target area. This round is packed in an M548 ammunition container (48 rounds, linked, in each container). It is olive drab with a yellow ogive and yellow markings. It has a PIBD, M549 fuze, and Comp B filler. It arms between 18 to 30 meters and has a casualty radius of 15 meters.

(2) The two HE (high-explosive) cartridges inflict personnel casualties in the target area with ground burst effects. Their fillers and body materials differ although performance traits are the same. Neither has the armor penetrating ability of the HEDP M43Ø round. They are both in wooden boxes, 50 rounds to a box.

(a) HE M383 or M383E1. These rounds are linked with M16A2 links, DODAC B571.

(b) HE M384. These rounds are linked with M16A2 links, DODAC B47Ø.

(3) The M385 practice rounds are joined with either M16A1 OR M16A2 links, B49Ø. They are packed the same as the HE rounds, in wooden boxes, 50 rounds to a box.

(4) The M922 dummy cartridges are joined with M16A2 links. Each MK 19 is allowed one 10-round belt (DODAC B472), which is packed in an M2A1 metal box. These inert cartridges are used to check weapon function and for crew training.